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ABSTRACT

This paper presents results of an investigation designed to examine the effectiveness of a structured problem-solving process entitled peer collaboration to assist general classroom teachers in developing and implementing alternative interventions focused on the needs of students with mild learning and behavior problems. Forty-eight teachers from southeastern Wisconsin and central Illinois, teaching in elementary through junior high classes, were in the intervention group. Forty-three elementary school teachers from the same regions were in the comparison group. Data indicate that teachers in the intervention group increased their tolerance for the range of cognitive abilities their idealized teachable pupils might exhibit as measured by the Teachable Pupil Survey (Kornblau, 1982). Using the peer collaboration process, teachers reconceptualized their understandings of classroom problems and were generally able to generate a wide variety of successful individual interventions to address identified learning and behavior problems. (Author)

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Peer Collaboration: Enhancing Teacher Problem-Solving Capabilities for Students at Risk

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Authors' Note

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Abstract

This paper presents results of an investigation designed to examine the effectiveness of a structured problem-solving process entitled peer collaboration to assist general classroom teachers in developing and implementing alternative interventions focused on the needs of students with mild learning and behavior problems. Forty-eight teachers from southeastern Wisconsin and central Illinois, teaching in elementary through junior high classes, were in the intervention group. Forty-three elementary school teachers from the same regions were in the comparison group. Data indicate that teachers in the intervention group increased their tolerance for the range of cognitive abilities their idealized teachable pupils might exhibit as measured by the Teachable Pupil Survey (Kornblau, 1982). Using the peer collaboration process, teachers reconceptualized their understandings of classroom problems and were generally able to generate a wide variety of successful individual interventions to address identified learning and behavior problems.

Peer Collaboration: Enhancing Teacher Problem-Solving Capabilities for Students at Risk

Professionals in the field of special education have become increasingly interested in the quality of instructional and management strategies used by classroom teachers with students who are experiencing mild learning and behavior problems but who are not formally identified as handicapped. Through a class of activities known as prereferral interventions, special education teachers are beginning to take a much more active role in assisting their general education colleagues to develop new ways of accommodating students who are not progressing successfully. The purpose of such prereferral activity appears to be twofold. First, it is a means of providing one-to-one staff development for classroom teachers in the area of alternative instructional and management approaches for individual students. Second, when prereferral interventions are successful, the potential for students to enter into the special education referral-to-placement system inappropriately is minimized. As a result, prereferral activity has the potential to address one of the most long-standing frustrations among special educators, namely, that much of their work is directed toward attending to failures of general education (Dunn, 1968).

The two most common forms of prereferral intervention activity are special education consultation (Fuchs & Fuchs, in press; Graden, Casey, & Christenson, 1985; Idol-Maestas, 1983) and informal teaming (Chalfant, Pysh, & Moultrie, 1979). In the consultation model, the special education teacher works directly with the classroom teacher to develop intervention plans for the specific problem of concern. Such plans often call for the use of data-based approaches and much recent training in special education consultation incorporates data-based instruction as the intervention of choice (Idol-Maestas, 1983). In

the teaming model, informal groups of school personnel gather to assist the classroom teacher in developing a solution to the problem. While the membership of such teams varies from district to district and from state to state, probably its most common configuration includes a principal, special education teacher, school psychologist, and the referring classroom teacher (see, for example, Mehan, Hertweck, & Meihls, 1986), although this was not the intention of the original model as conceptualized by Chalfant et al.

In both of these general models, then, informal assistance for students having mild learning or behavior problems is mediated by members of the special education profession. The assumption underlying these approaches to prereferral activity is that the input of special educators is needed to identify and effect appropriate classroom interventions, and that without such input, classroom teachers are likely to have difficulty meeting the needs of their problem students. To date, however, little attention has been focused on the degree to which classroom teachers can develop and implement instructional and management interventions for problematic students independent of the direct input of special educators. By assuming that all prereferral problems require the involvement of special education, albeit informal involvement, it becomes difficult to clarify the kinds of problems classroom teachers are in fact capable of solving independently. The limited resources of special education may continue to be used in situations where general education teachers may in fact have the expertise to solve many problems themselves.

The purpose of this study was to examine the effectiveness of a structured problem-solving strategy called peer collaboration in increasing the capabilities of classroom teachers to develop and implement alternative interventions for students with mild learning or behavior problems. Relying on strategies associated with the development of metacognitive thinking, teachers

work with their peers in rethinking classroom problems and placing them in the context of those variables over which they have control in the classroom. In particular, we were interested in identifying the ways in which teachers described classroom problems, how those descriptions changed after engaging in problem clarification, the kinds of interventions teachers generated, and the success of teachers' efforts.

Method

Subjects

The intervention group included 44 elementary school teachers and four middle school teachers and a comparison group of 43 elementary teachers. In the intervention group, 18 elementary teachers and the 4 middle school teachers came from a single district in southeastern Wisconsin; the remaining 26 elementary teachers came from five school districts in central Illinois. These 48 teachers were divided into 21 pairs and two triads for purposes of the study. For the comparison group, 20 teachers came from the same Wisconsin district and 23 teachers from the five districts in Illinois. Table 1 contains a breakdown of general demographic characteristics of the intervention and comparison groups.

Insert Table 1 about here

Teachers volunteered to participate in the study after attending a brief presentation at their schools. These introductory presentations took place either before or after school. Teachers chose pairs voluntarily but were encouraged to choose a partner who taught in the same or near the same grade level. Classroom teachers were instructed to select a classroom teacher as a partner and specialists were encouraged to select another specialist to

preserve true peer relationships. In two pairs, however, the nature of the volunteer group made this impossible and a classroom teacher was paired with either a learning disability teacher or a reading specialist.

Procedures

Experimental subjects received training in peer collaboration and agreed to apply the process following training to at least four problems per pair during the period from October 1986 to April 1987. For teacher pairs, participants initiated two problems each; for triads, each participant initiated one problem each, and the fourth problem was initiated by any one of triad's members.

The peer collaboration process. The purpose of peer collaboration is to assist classroom teachers in developing a clearer understanding of the problems they are encountering through a reflective consideration of the many variables that may be contributing to the problematic situation. Consistent with research on the acquisition of metacognitive strategies (Brown & Palincsar, 1982), the peer collaboration process is designed to encourage the initiating teacher to practice a new set of problem-solving skills explicitly, with peer feedback, as a precursor to the internalization of those skills.

Peer collaboration is a structured four-step, collegial problem-solving process incorporating the strategies of (a) problem clarification through self-questioning, (b) problem summarization, (c) generating potential interventions and predicting their outcomes, and (d) developing an evaluation plan. When teachers use the peer collaboration process one teacher initiates the discussion and follows the steps in the process for the purpose of expanding his or her understanding of the problem, while the peer partner, or "facilitators," assist their partners in assuring that the steps are followed appropriately. The first three steps of the process incorporate strategies

associated with reciprocal teaching procedures developed by Palincsar and Brown (1984) in the area of reading comprehension. In the context of peer collaboration, the goal is to improve the comprehension of classroom problems on the part of classroom teachers.

A detailed description of the four steps is available elsewhere (Pugach & Johnson, 1987). Briefly, the first step in the process is the longest and provides the foundation for the subsequent steps. The initiating teacher brings a brief written description of the problem in question and generates and responds to questions aloud to clarify all aspects of the problem. This provides the opportunity for the initiating teacher to engage in a verbal rehearsal of questioning strategies. The facilitating teacher provides structure by suggesting different or expanded factors for questioning using the format, "Is there a question you might ask yourself about the activities the student is successful in completing?" Question clarification continues until the initiating teacher has exhausted relevant issues and believes a summarization is appropriate.

The summary, or second step, includes three parts: a description of the pattern of student behavior, the teacher's response to or feelings about the situation, and the identification of variables over which the teacher has control. The summarization step allows the teacher to consolidate the information gathered in the previous step and begin to think about which variables might lend themselves best to the intervention. The facilitator again works to preserve the process by describing the parts of the summary and assisting the partner in checking that all parts have been included and that behavior patterns and classroom variables are consistent.

In the third step, teachers generate at least three possible interventions taking into account key variables delineated in the previous step. The

initiating teacher then predicts potential outcomes for each one of the interventions that might be implemented. Creating predictions and stating them publicly provides an opportunity for the initiating teacher to reflect on the potential hazards and benefits of implementing that intervention.

The final step in the process is the development of an evaluation plan. This plan is to be practical and includes both a method to monitor the implementation of the intervention and the outcome of the intervention. The facilitator prompts his/her partner to ensure that the plan is practical and includes both process and outcome measures. At this point a meeting is set for approximately two weeks later to examine the effectiveness of the intervention.

Training

Teachers in the intervention group were trained in the process of peer collaboration in September and October of 1986. Training sessions took place in the schools, primarily after school hours. Two four-hour sessions were conducted. In the first session, an overview of peer collaboration was presented accompanied by a taped demonstration. Teachers were provided with guide booklets that contained descriptions of each of the four steps and activities designed to increase understanding of the purpose of each step. In the second session, each step was practiced in the large group.

In the second phase of the training, pairs worked through problems they were experiencing in their classroom using peer collaboration. During this part of the training the trainer guided teachers through the each step of process using a minimum number of prompts when difficulties in implementation occurred. This phase of the training occurred in two two-hour blocks during which one member of the pair served as facilitator and the other as initiator. If teachers were unable to use the process without making errors at

the end of these sessions, additional sessions monitored by trainers were scheduled.

Measures and Data Analysis

Three sets of data were collected from both intervention and comparison subjects prior to training. They included (a) a demographic questionnaire, (b) a description of students who were having problems in class that year, and (c) the Teachable Pupil Survey (Kornblau, 1982), an instrument designed to identify teacher preference for 33 attributes of idealized teachable pupils in three categories: cognitive, social, and school appropriate behavior dimensions. The cognitive dimension includes such descriptors as: clear thinking, logical, intelligent, and insightful. The descriptors on the social dimension include: calm, friendly, happy, well-accepted and liked by peers, and emotionally stable. Examples of descriptors on the school appropriate dimension include items like: completes work on time, follows directions, and attentive to classroom directions. Each item was rated on a scale from 1 to 6, with a rating of 1 indicating the descriptor is not at all a desirable attribute of an idealized teachable pupil and a rating of 6 indicating the descriptor is almost always a desirable attribute of an idealized teachable student.

In addition to these data sources, all peer collaboration sessions were tape-recorded and converted to transcripts. Using qualitative methods of content analysis, transcripts were studied to identify the kinds of problems teachers chose to solve using peer collaboration, to categorize classes of problem descriptions as compared with problem summaries, and to identify categories of instructional and management interventions teachers selected. The development of categories followed the use of the constant comparative approach suggested by Glaser and Strauss (1967).

At the conclusion of the study, all subjects again completed the Teachable Pupil Survey. Intervention subjects completed summary forms for each problem on which they worked. Intervention subjects also participated in one final, large group debriefing session at their home schools; these sessions were tape-recorded and converted to transcripts for subsequent analysis.

Results

Three Split-plot Factorial ANOVAs (Kirk, 1982) were conducted to analyze scores obtained on the cognitive, social, and school appropriate domains of the Teachable Pupil Survey. These ANOVAs had one between and one within group factor. The between group factor had two levels that represented group membership in the intervention or comparison group and the within group factor had two levels that represented pre and post administration of the instrument. Table 2 contains the means and standard deviations of teacher scores on three dimensions of the Teachable Pupil Survey. Table 3 contains a summary of the ANOVA results.

Insert Tables 2 and 3 about here

As Table 2 illustrates, the expectations teachers in the intervention group held regarding cognitive and social abilities of their students decreased after the intervention, whereas expectations of teachers in the comparison group slightly increased on these dimensions. These shifts were represented by lowered mean scores on the survey for the intervention group, which reflect greater tolerance for ranges of the behaviors under consideration. Both intervention and comparison group teachers showed slight decreases in their expectations regarding school appropriate behaviors. Examination of Table 4 reveals that shifts in teacher expectations on the cognitive dimension were

significant at the .05 level and the shifts in expectations of teachers on the social dimension approached significance and had a probability of occurring of less than .08.

A total of 74 usable problems were completed during this study, 70 at the elementary level and 4 at the middle school level. The results of transcript analyses for the 70 elementary problems appear in Tables 4, 5, and 6.

Insert Table 4 about here

Table 4 displays the comparison of elementary level problem descriptions with problem summaries developed subsequent to completing the step of asking clarifying questions. The three highest categories of initial problem descriptions included acting out or hostile behavior, off-task or distractibility, and poor completion of work. Of the 70 problems described initially, the summarizations of 64 of those problems, or 91 percent, shifted to new categories following the asking of and responding to clarifying questions. Only two problems each described as off-task behavior and acting-out behavior remained in the same category following clarification, and only one each remained in the categories of poor motivation/attitude and low general achievement. Further, only one problem was coded in the category of poor self-concept as a description; 12 were so categorized in subsequent problem summaries. Similarly, no descriptions focused on the absence of an appropriate structure in the classroom, while 18 were so categorized as summaries.

Insert Table 5 about here

In Table 5, interventions selected for implementation are listed in order of descending frequency for the 70 elementary problems. The most commonly selected intervention included some form of academic adjustment; the breakdown of these adjustments appears in Table 6. The two next most frequent interventions included changes of seat and various forms of charting and self-monitoring of student behavior. For 40 of these problems, teachers combined more than one of the interventions they generated to form a single, multi-faceted intervention. Secondary interventions also appear in Table 5; for 12 of the problems or 17 percent, some type of positive reinforcement was paired with other primary interventions. A common combination included using some form of charting with tangible or activity reinforcers.

Insert Table 6 about here

Teacher reports of student improvement following intervention appear in Table 6. The main concerns of teachers in these written analyses were what would happen in the following year if the receiving teacher did not set up some kind of individual intervention or continue the intervention then in use.

Discussion

Data from this investigation suggest that utilizing the peer collaboration process had a positive, beneficial impact on teachers. A shift occurred in the expectations regarding the cognitive abilities of idealized students by teachers in the intervention and comparison groups that was statistically significant. Comparison group teachers increased their expectations while the intervention group decreased their expectations, suggesting that teachers in the experimental group showed greater tolerance for children of lesser cognitive ability. Although not significant, a similar trend that approached

statistical significance existed for teacher expectations regarding social abilities. Increasing teacher tolerance for student abilities that deviate from the norm is an important consideration in helping accommodate the needs of students with mild learning and behavior problems.

Interestingly, while teachers' expectations regarding student abilities shifted as measured by the cognitive and social dimensions of the Teachable Pupil Survey, expectations regarding compliance with basic classroom routines, as measured by the school appropriate dimension, remained consistent in the two groups. It appears that the peer collaboration process had impact on teacher perceptions of the characteristics students needed to be successful in their classrooms, but did not affect their expectations regarding student compliance with classroom routines.

The comparison of initial problem descriptions with those contained in problem summaries is rather dramatic. Teachers became more specific in their understandings of the problems they encountered and shifted to discussing them in a manner which made problems potentially more solvable. It appeared that immediate frustration receded when teachers had a constructive structure with which to address the more difficult instructional and management situations they faced. As a result, teachers were able to identify alternatives within their repertoire of teaching strategies and implement them in a successful manner. These data support the contention that time is needed for teachers to reflect on their concerns in a structured way before codifying the nature of the difficulties for which interventions might be needed and seeing them as a rationale for formal referral consideration. Without such a period of reflection, classroom difficulties may easily be characterized inaccurately or icompletely. Developing and implementing interventions based on problems that have been inaccurately defined from the outset is counter-productive and will

likely to contribute to the already existing frustration teachers may be experiencing with their most challenging students.

Finally, these data have important implications for expert models of consultation now favored within special education practice. It appears that classroom teachers are in fact able to generate a wide variety of interventions that can be utilized to accommodate students with mild learning and behavior problems. In order for teachers to tap this expertise, however, both time and a structure within which to think strategically are needed. Teachers not only need time to reflect on the nuances of the problem, but they also need ways to identify classroom variables which they can control as well as the belief that they can solve problems successfully. As consultation models are now conceptualized, little credibility is ascribed to the capabilities of classroom teachers in developing appropriate interventions independent of the input of special educators. Fostering strategic thinking through processes like peer collaboration makes it possible for classroom teachers to draw on the expertise they already possess and use it constructively; failing to foster such growth contributes to the cycle of dependence upon special education. Given that such dependence has traditionally been the source of great criticism on the part of special educators, breaking the cycle would seem to be a worthy goal.

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Table 1

Demographic Data for Participating Teachers

Demographics	Groups	
	Intervention	Comparison
Number of Teachers	48	43
Gender of Teachers		
Male	5	3
Female	43	40
Location of Teachers		
Illinois	26	23
Wisconsin	22	20
Highest Degree Earned by Teachers		
Bachelors	23	18
Masters	25	25
Mean Age of Teachers	41.40	40.70
Mean Years of Experience	15.15	13.60

Table 2

Mean Scores of Participating Teachers on the Teachable Pupil Survey

	Intervention		Comparison	
	Pre	Post	Pre	Post
Cognitive	4.62	4.31	4.35	4.45
School Appropriate	5.09	4.94	4.92	4.85
Social	4.74	4.45	4.51	4.55

Table 3

ANOVA Summary Table for Scores of Intervention Group Teachers and Comparison Group Teachers

		Cognitive		School Appropriate		Social	
	df	MS	F	MS	F	MS	F
Between Groups							
Group	1	.20	.15	.77	.91	.22	.23
Error	89	118.24	--	74.97	--	84.84	--
Within Groups							
Time	1	.58	1.49	.63	2.33	.85	2.29
Gr x Ti	1	1.89	4.85**	.07	.26	1.24	3.35*
Error	89	35.07	--	24.24	--	33.25	--
Total	181	155.98					

*p < .08

**p < .05

Table 4

Comparison of Problem Classification Before and After Clarifying Questions

Before Clarifying Questions (Description)	After Clarifying Questions (Summary)									
	Off-task, distractible	Poor self-concept	Poor motivation/attitude	Act out/hostile/disruptive	Low general achievement	Specific skill deficit	Absence of appropriate structure	Needs positive attention	Other	Total
Off-task, distractible	2[a]	4	1	1	-	2	6	1	1	18
Poor self-concept	-	-	1	-	-	-	-	-	-	1
Poor motivation/attitude	-	-	1[a]	-	-	-	-	-	-	1
Act-out/hostile/disruptive	-	5	1	2[a]	-	2	7	5	1	23
Talk-out	-	-	-	-	-	1	-	1	-	2
Poor work completion	2	1	1	-	1	3	2	-	-	10
Low general achievement	-	-	-	-	1[a]	2	1	1	1	6
Specific skill deficit	1	1	-	-	1	-	1	-	1	5
Other	2	1	-	-	-	-	1	-	-	4
Total	7		5	3	3	10	18	8	4	70

Note. N=70 problems for 44 elementary teachers.

[a]For these problems only classifications did not change following clarifying questions.

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Table 5

Categories of Interventions for Peer Collaboration Problems

	Primary		Secondary
Intervention	Frequency	Percent	Frequency
Academic adjustment[a]	14	20	3
Change seat	10	14	4
Charting/self-monitoring	9	13	4
Management adjustment	5	7	3
Positive reinforcement[b]	5	7	12
Assignment clarification	4	6	-
Immediate assistance	4	6	1
Curtail negative teacher response	3	4	-
Increase communication with parents	2	3	-
Restructure peer interaction	2	3	3
Peer tutoring	2	3	1
Daily note home	2	3	1
Contract	2	3	-
Clarify/break down task	2	3	3
Increase individual attention	1	1	2
Time out	1	1	1
Discussion	1	1	1
Work with specialist	1	1	1
Total	70	99	40

[a]See Table 6 for breakdown of this category

[b]Includes verbal, activity, and tangible reinforcers

Table 6

Breakdown of Academic Adjustment Interventions

Intervention	Primary	Secondary
Change/fix order of work (combined with shorter assignments)	3	-
Change expectations	2	1
Vary/alternate activities	2	1
Reduce competitive activities	1	-
Increase use of visual cues with oral directions	1	-
Combine sound blending with motor response	1	-
Write stories on computer (to increase story length)	1	-
Increase wait time	1	-
Change format to discussion in one-to-one work	1	-
Change reading group and provide phonics remediation	1	-
Total	14	2

Table 7

Outcomes for Peer Collaboration Interventions as Reported by Teachers, 1986-87

Level of Success	Frequency	Percent
Much improved	30	43
Improved	30	43
Not improved	3	4
Referred	7[a]	10
Total	70	100

Note. N=44 elementary teachers

[a]General testing - 2; LD - 2; ADD - 1; Gifted and Talented - 1; Communication - 1.

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